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NEW METHODS, MATERIALS EMPHASIZED IN ORDERS  
TO HEAVY INDUSTRY CONSTRUCTION OUTFITS

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In 1949 the Ministry of Construction of Heavy Industry Enterprises must accomplish nearly 1.5 times as much construction and installation work as it accomplished in 1948.

The plan specifies construction of 12 heavy items, including three blast furnaces, three open-hearth furnaces, and shops for a rail and structural mill and a sheet-rolling mill.

Dispatcher contact (dispatcherskaya svyaz') must be organized in the trusts of the Ministry. As the experience of the Zaporozhstroy and other trusts of the Ministry has demonstrated, introduction of dispatcher contact improves the integration of the work of all the organizations at the construction sites and accelerates rate of construction.

## Mechanization of Construction

The 1949 plan specifies the following mechanization of operations (in percent of total volume of these operations): 75 percent of earth work in the main administrations of construction and 90 percent in Glavspetsstroy (Main Administration of Special Construction); 98 percent of concrete and mortar mixing; 75 percent of concrete pouring; 37 percent of plastering in main administrations of construction, and 50 percent in Glavspetsstroy; 55 percent of painting in main administrations of construction and 60 percent in Glavspetsstroy; 95 percent of structural steel assembly and 50 percent of loading and unloading.

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In 1948 the "Sovetskavatsiya" Trust gave inadequate attention to training of personnel and to utilization of available means of transportation, especially of rail transport. It did not fulfill a number of tasks assigned by the Ministry including development of hydromechanization and organization of blasting.

The plan calls for 2,700,000 cubic meters of earth work to be done by means of hydromechanization.

Transporting of wall materials in containers must be introduced. This method decreases labor-consumption of loading and unloading operations 60 - 65 percent and reduces cost considerably.

The "Vladimirpromstroy," "Bazstroy," "Sverdlovskpromstroy," and other trusts had favorable results in shipping wall materials in containers in 1948. During 4 months of 1948 "Vladimirpromstroy" Trust shipped approximately 2,500,000 bricks in containers, and by this reduced labor-consumption in all loading, unloading, and transport operations from 10.65 to 6.00 man-hours per 1,000 bricks. During 6 months of 1948 one of the trusts shipped 2,700,000 bricks in containers.

The low level of mechanization at many quarries is leading to an inadequate supply of materials and high prices for construction work.

Although "Sverdlovskpromstroy," "Bazstroy," "Pribalkhashstroy," "Sevuraltyazhstroy," and other trusts reached a high level in mechanization of plastering in 1948, the trusts of the Glavchermetstroy of the Donbass, Glavchermetstroy of Pridneprov'ye, and the Glavyugstroy had an intolerably low level of mechanization, less than 10 percent.

#### Housing

Construction of houses according to standard designs selected by the Ministry and built with standard parts must make up not less than 60 percent of the entire 1949 housing program, as compared to 35 - 40 percent in 1948. Realization of this will make it possible to reduce labor-consumption in construction 500,000 man-days and considerably reduce its estimated cost. House construction combines must increase their output of standard frame houses to 300,000 square meters of floor space in 1949.

Construction of settlements by mass-production methods must reach 420,000 square meters. This will reduce labor-consumption 670,000 man-days and reduce the estimated cost 8 million rubles.

#### Construction Materials and Parts

The 1949 technical plan specifies: (a) increased production and use of new light materials (rockwool, hollow ceramics, asbestos-cement products, new types of light concrete building blocks); (b) development of plant production of the parts and plans; and (c) extensive use of local sources of raw materials.

The plan specifies production and use of new types of thermo-insulating rockwool products, slabs of mineral cork, felting mats on synthetic and bituminous binders, granular wadding, etc. In 1949, 30,000 tons of rockwool must be produced. Sixteen thousand tons of this total must be in shaped rockwool items.

Production of 500,000 square meters of wood fiber slabs of the "Orgalit" type, 5,000 square meters of Portland cement fibrolite, and 20,000 square meters of waterproof asbestos-cement insulating slabs is also called for in 1949.

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Furthermore, 360,000 square meters of corrugated sheets of reinforced section iron for cold walls and external covering of industrial buildings, and 100,000 square meters of hollow asbestos-cement slabs for thermal insulation of industrial buildings must be used. Use of light walls of asbestos-cement slabs makes possible an almost seven-fold decrease in labor-consumption, makes the walls 14 times lighter, and cuts the cost in half.

Asbestos-cement corrugated slabs were first used in the USSR in construction of the rolling mill of the "Azovstal'" Plant and of the plate mills of the "Zaporozhstal'" Plant.

The plan specifies production of automatically-machined hollow concrete building blocks with closed-slit cavities. This makes possible light walls without filling the cavities with slag. Production of such blocks must be over 20 percent of the total output of hollow concrete building blocks by the Ministry in 1949.

Thirty million perforated bricks must be produced in 1949.

The plan specifies equipment for enriching slag at the 17 slag block plants of the Ministry, the use of 63,000 cubic meters of plaster and slag-concrete construction parts, and conversion of a number of brick plants to year-round operations.

#### Concrete and Reinforced Concrete Work

The amount of reinforced concrete work accomplished by the Ministry in 1945 - 1947 was a little below the prewar level. With the increased amount of new construction in 1948 the amount of concrete and reinforced concrete work also began to increase rapidly. In the near future reinforced concrete must be widely used in construction of industrial buildings and other structures.

The 1949 technical plan specifies: (a) Output of 160,000 cubic meters of assembled reinforced concrete structures and parts. The amount of assembled reinforced concrete will be 15 percent of the total amount of reinforced concrete. (b) Production of hollow reinforced concrete flooring beams, which is being organized for the first time. Thirty thousand square meters of flooring beams must be produced at the "Stroydetal'" Plant in Moscow in 1949. Simultaneously a group of other plants must be built to increase output of these structures. Use of flooring beams will cut labor-consumption in building of ceilings 2 - 3 times. (c) Production and use of 3,500 cubic meters of tension-reinforced (napryazhenno-armirovanny) construction parts (beams, flooring, etc). This measure will save a considerable amount of metal in building ceilings. (d) Production of 70,000 linear meters of reinforced concrete rising pipe. Use of reinforced concrete pipes instead of steel pipes will reduce construction costs. (e) Manufacture of 8,000 square meters of reinforced cement slabs for insulating industrial buildings. They are being produced for the first time. These slabs are twice as thin as the usual roofing reinforced concrete slabs. They lighten insulating and supporting structures. (f) Construction of 15 reinforced-concrete conical smokestacks. This material will reduce the weight of smokestacks 30 - 50 percent and cut the cost of construction 20 percent compared with brick smokestacks. (g) Production of 4,000 tons of welded structural frames. This will increase labor productivity in armature work and make possible a 20-percent saving on armature steel.

#### Steel Structures

Different types of welding and especially automatic welding must be introduced. Before the war the average labor productivity of a welder (in manual welding) was 18 - 25 meters of seam per shift; now it is 45 - 50 meters and in individual cases up to 140 meters.

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Introduction of high-grade arc welding made it possible to produce 1,300 cubic meters of metal structures of an all-welded blast furnace in 81 calendar days and to assemble the furnace at "Zaporozhstal'" in 105 calendar days. This is record time; 12 percent less metal was consumed than in a riveted structure of comparable size.

Advanced technology in production of steel structures, welding by an ultra-short arc, contact spot electric welding of great thicknesses on single purpose machines, etc., has increased labor productivity.

The technical plan specifies: (a) automatic welding under a coating of flux in production of 22 percent of the total output of welded structures; (b) speed electric welding with use of new-type electrodes and new methods of welding by deep penetration of ultrashort arcs; introduction into this welding of a new type of transformer 450 - 600 amperes or 1,000 amperes, and of high-power direct current generators; (c) welding of structures for six blast furnaces; (d) establishment of acetylene stations at three plants, and installation of six automatic machines and 60 cutters.

The plan also specifies: plant manufacture of 40,000 tons of standard bridge span structures and 2,000 tons of wall and lantern window casements, output of 4,500 tons of electrodes with special insulation for automatic welding, production of 3,000 tons of corrugated steel covering with an anticorrosive coating, and the use of cold pressing in production of 2,000 tons of light section iron.

Realization of the 1949 technical plan will increase labor productivity 14 percent and reduce construction cost 2.15 percent.

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